

REMARKS

The present application was filed on July 18, 2003 with claims 1 through 31. Claims 1 through 31 are presently pending in the above-identified patent application. Claims 1, 3, 19, 30, and 31 are proposed to be amended herein.

5 In the Office Action, the Examiner objected to the length of the abstract, objected to claims 1 and 30 due to indicated informalities, and rejected claims 1, 3, 19, 30, and 31 under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner rejected claims 1-19, 30, and 31 under 35 U.S.C. §103(a) as being unpatentable over Mizuno et al. (United States Patent Number 6,683,503) in view of Hara et al. (United
10 States Patent Number 5,446,418). The Examiner did not specifically reject claims 20-29, but included claims 20-29 in the rejection comments.

Formal Objections

The length of the abstract was objected to, and claims 1 and 30 were objected to due to indicated informalities. Regarding claim 30, the Examiner asserts that
15 the preamble is unclear. Regarding claim 1, the Examiner requests that the “,” following “determining” be removed.

The abstract has been amended to be 150 words or less and claim 30 has been amended to address the Examiner’s concerns. Applicants maintain that the “,” following “determining” in claim 1 is grammatically correct.

Section 112 Rejections

20 Claims 1, 3, 19, 30, and 31 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. In particular, the Examiner asserts that the term “approximately equal” is not defined by the claim, that the specification does not provide a standard for ascertaining the requisite degree, and that one of ordinary skill in the art
25 would not be reasonably apprised of the scope of the invention.

Claims 1, 3, 19, 30, and 31 have been amended to address the Examiner’s concerns.

Independent Claims 1, 19, 30 and 31

30 Independent claims 1, 19, 30, and 31 were rejected under 35 U.S.C. §103(a) as being unpatentable over Mizuno et al. in view of Hara et al. In particular, the Examiner acknowledges that Mizuno does not explicitly disclose that the second and

third designed gate lengths are different and one of the second and third designed gate lengths is approximately equal to the first designed gate length, but asserts that Hara does “teach an oscillator with different gate length size for (determining) an input capacitance and load resistance of component.”

5 First, Applicants note that neither Mizuno nor Hara disclose or suggest *determining the performance of MOS DEVICES by using ring oscillators* and do not disclose or suggest *determining at least one additional characteristic of MOS devices* using the ring oscillators. In addition, Applicants maintain that the use of ring oscillators to determine characteristics of MOS devices would not be obvious to a person of ordinary
10 skill in the art, as evidenced by the prior art techniques utilized for such characterization (as outlined in the background section of the present disclosure). For example, the present disclosure teaches that, “in CMOS technologies prior to generations having linewidths of about 0.18 μm , the effective length of the gate, L_{eff} , was determined by extrapolation of the channel resistance of MOSFETs as a function of the designed gate
15 length, L_{mask} .” (Page 1, lines 15-18.)

Regarding the Examiner’s comments on the gate lengths taught by Hara (page 5 of the present Office Action), Applicants note that FIGS. 6-11 are directed to *different embodiments* of the invention. Hara does *not* disclose or suggest that the ring oscillators are utilized together in a single embodiment, and neither Mizuno nor Hara
20 suggest *combining a plurality of ring oscillators utilizing different gate lengths*.

Independent claims 1 and 31, as amended, require that the second and third designed *gate lengths are different* and require *determining performance by using at least one of the given ring oscillators; and determining, using the plurality of ring oscillators, at least one additional characteristic of MOS devices in the plurality of ring*
25 *oscillators*. Independent claim 19, as amended, requires each of the plurality of coupled stages for a first given ring oscillator comprises an inverter having at least one first MOS device having a first designed gate length; each of the plurality of coupled stages for a second given ring oscillator comprises an inverter substantially identical to the inverters in the coupled stages of the first given ring oscillator and coupled to at least one second
30 MOS device having a second designed gate length; each of the plurality of coupled stages for a third given ring oscillator comprises an inverter substantially identical to the

inverters in the coupled stages of the first given ring oscillator and coupled to at least one third MOS device having a third designed gate length; *the second and third designed gate lengths are different; and one of the second and third designed gate lengths is substantially equal to the first designed gate length.* Independent claim 30, as amended, requires each of the plurality of coupled stages for a first given ring oscillator comprises an inverter having at least one first MOS device having a first designed gate length; each of the plurality of coupled stages for a second given ring oscillator comprises an inverter substantially identical to the inverters in the coupled stages of the first given ring oscillator and coupled to at least one second MOS device having a second designed gate length; each of the plurality of coupled stages for a third given ring oscillator comprises an inverter substantially identical to the inverters in the coupled stages of the first given ring oscillator and coupled to at least one third MOS device having a third designed gate length; *the second and third designed gate lengths are different; and one of the second and third designed gate lengths is substantially equal to the first designed gate length.*

Thus, Mizuno and Hara et al., alone or in combination, do not disclose or suggest require that the second and third designed gate lengths are different and does not disclose or suggest determining performance by using at least one of the given ring oscillators; and determining, using the plurality of ring oscillators, at least one additional characteristic of MOS devices in the plurality of ring oscillators, as required by independent claims 1 and 31, as amended, do not disclose or suggest each of the plurality of coupled stages for a first given ring oscillator comprises an inverter having at least one first MOS device having a first designed gate length; each of the plurality of coupled stages for a second given ring oscillator comprises an inverter substantially identical to the inverters in the coupled stages of the first given ring oscillator and coupled to at least one second MOS device having a second designed gate length; each of the plurality of coupled stages for a third given ring oscillator comprises an inverter substantially identical to the inverters in the coupled stages of the first given ring oscillator and coupled to at least one third MOS device having a third designed gate length; *the second and third designed gate lengths are different; and one of the second and third designed gate lengths is substantially equal to the first designed gate length,* as required by independent claim 19, as amended, and does not disclose or suggest each of the plurality

of coupled stages for a first given ring oscillator comprises an inverter having at least one first MOS device having a first designed gate length; each of the plurality of coupled stages for a second given ring oscillator comprises an inverter substantially identical to the inverters in the coupled stages of the first given ring oscillator and coupled to at least one second MOS device having a second designed gate length; each of the plurality of coupled stages for a third given ring oscillator comprises an inverter substantially identical to the inverters in the coupled stages of the first given ring oscillator and coupled to at least one third MOS device having a third designed gate length; the second and third designed gate lengths are different; and one of the second and third designed gate lengths is substantially equal to the first designed gate length, as required by independent claim 30, as amended.

Dependent Claims 2-18 and 20-29

Dependent claims 2-18 (and 20-29) were rejected under 35 U.S.C. §103(a) as being unpatentable over Mizuno et al. in view of Hara et al.

Claims 2-18 and 20-29 are dependent on claims 1 and 19, respectively, and are therefore patentably distinguished over Mizuno et al. and Hara et al. (alone or in any combination) because of their dependency from amended independent claims 1 and 19 for the reasons set forth above, as well as other elements these claims add in combination to their base claim.

All of the pending claims, i.e., claims 1-31, are in condition for allowance and such favorable action is earnestly solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

The Examiner's attention to this matter is appreciated.

Respectfully submitted,

A handwritten signature in black ink that reads "Kevin M. Mason". The signature is written in a cursive style with a large 'K' and a long, sweeping underline.

Date: December 21, 2005

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